Section 2
Stormwater Program Characterization

2.1 Applicant Information

The existing area-wide MS4 Permit is recorded as follows:

> Order No. R8-2002-0012, NPDES No. CAS618036, Waste Discharge Requirements for the San Bernardino County Flood Control District, the County of San Bernardino, and the incorporated cities of San Bernardino County within the Santa Ana Region.

No change in the jurisdictional area covered by the existing MS4 Permit is requested in this application. The Principal Permittee will continue to be the San Bernardino County Flood Control District. The mission of the District is to develop and maintain flood control facilities, including dams, conservation basins, channels and storm drains to intercept and convey flood flows through and away from the urbanized areas of San Bernardino County.

Co-Permittees with the District will continue to include San Bernardino County and the cities of Big Bear Lake, Chino, Chino Hills, Colton, Fontana, Grand Terrace, Highland, Loma Linda, Montclair, Ontario, Rancho Cucamonga, Redlands, Rialto, San Bernardino, Upland, and Yucaipa.

The lead agency for the Principal Permittee and each Co-Permittee represented by this MS4 Permit application is provided in Table 2-1. Where a program responsibility applies to the Principal Permittee or Co-Permittee, then these terms are used; however if a program element applies to both the Principal Permittee and Co-Permittees, then the generic terms "permittee" or "permittees" are used.

2.2 Stormwater Permit Program History

Early in the NPDES stormwater permitting history for San Bernardino County, it was recognized that management and control of the MS4 would require the cooperation of multiple County and city jurisdictions. Accordingly, the District, County, 16 cities, and the RWQCB agreed that the best management option for the MS4 Permit area was to issue an area-wide stormwater MS4 Permit as authorized in Section 402(p)(3)(B)(I) of the Clean Water Act.

Acting together under an Implementation Agreement, the District, County, and 16 cities submitted NPDES stormwater permit application CA8000200 to the RWQCB on August 29, 1990 for authorization to discharge stormwater under an area-wide discharge permit. Following RWQCB review and public comment, on October 19, 1990 the RWQCB adopted the first MS4 Permit for the San Bernardino County area - Order Number 90-136, NPDES Permit Number CA8000200. In March 1996, this permit was reissued under Order Number 96-32, NPDES Permit Number CAS618036 ("second permit").

Table 2-1. Summary of Area-wide MS4 Permit Participants

Jurisdiction	*Status*	*Lead Agency or Department*
San Bernardino County Flood Control District	Principal Permittee	Public Works /Environmental Management Division
County of San Bernardino	Co-Permittee	Public Works/ Environmental Management Division
City of Big Bear Lake	Co-Permittee	Public Works/Engineering
City of Chino	Co-Permittee	Public Works/Engineering Division
City of Chino Hills	Co-Permittee	Community Development
City of Colton	Co-Permittee	Public Utilities
City of Fontana	Co-Permittee	Public Works
City of Grand Terrace	Co-Permittee	Community Services
City of Highland	Co-Permittee	Public Works/Engineering
City of Loma Linda	Co-Permittee	Public Works
City of Montclair	Co-Permittee	Public Works
City of Ontario	Co-Permittee	Engineering
City of Rancho Cucamonga	Co-Permittee	Engineering
City of Redlands	Co-Permittee	Public Works
City of Rialto	Co-Permittee	Public Works
City of San Bernardino	Co-Permittee	Development Services
City of Upland	Co-Permittee	Public Works
City of Yucaipa	Co-Permittee	Public Works

On September 1, 2000, the permittees jointly submitted a ROWD as the application to renew the MS4 Permit for a third term ("third permit"). Issuance of the third permit did not occur prior to the expiration of the second permit; accordingly, on March 2, 2001, the RWQCB administratively extended the second permit. The third permit was issued on April 26, 2002 when the RWQCB adopted Order No. 2002-0012, NPDES Permit Number CAS618036, which authorized the discharge of stormwater until 2007. The third permit required the permittees to submit a ROWD, or application for renewal of the MS4 Permit, by October 27, 2006. This ROWD represents the permittees fulfillment of this requirement.

2.3 Program Management

The management structure for the area-wide program will remain substantially unchanged from that of the third permit. Additional information is available in the MSWMP (Appendix A).

2.3.1 Organizational Structure

The District, County, and the 16 cities covered under this MS4 Permit application have established an organizational structure that guides stormwater program

implementation at various levels. The following sections describe how this structure is organized, managed, and functions.

2.3.1.1 Implementation Agreement

The permittees operate under an Implementation Agreement ("Agreement"), which provides a framework for joint implementation of the MS4 Permit. This Agreement, which was first established in 1992 and last amended in 1995, is being revised for the next permit term (see Appendix B for draft Agreement).

Revision of the Agreement is focused on updating the cost-sharing methodology and clarifying the decision-making process. The cost-share formula in the previous Agreement considered relative land area, land use, and associated runoff factors. The revised Agreement uses a combination of relative population, relative land area and a fixed base cost. The draft Agreement is currently undergoing review within each jurisdiction. Once the Agreement is finalized, a final document will be provided to the RWQCB.

Under the revised Agreement, the Principal Permittee and Co-Permittee responsibilities will remain the same:

Principal Permittee Responsibilities - The Principal Permittee coordinates all MS4 Permit activities and manages the overall stormwater program implemented in the County. Responsibilities include:

- Conduct chemical, biological and bacteriological water quality monitoring as required by the permit.
- Implement management programs, monitoring programs, and related plans as required by the permit.
- Prepare and submit to the Executive Officer of the RWQCB, unified reports, plans, and programs necessary to comply with the permit.
- Coordinate and conduct Management Committee meetings as specified in the MSWMP.
- Take the lead role in initiating and developing area-wide programs and activities necessary to comply with the permit.
- Participate, as needed, in any subcommittees formed to facilitate permit requirements.
- Provide technical and administrative support and inform the Co-Permittees of the progress of other pertinent municipal programs, pilot projects, research studies, and other information to facilitate implementation of Co-Permittees' stormwater program.

- Coordinate the implementation of area-wide Stormwater Management Program activities such as a monitoring program, public education, and pollution prevention.
- Gather and disseminate information on the progress of statewide municipal stormwater programs and evaluate the information for potential use in the execution of the MS4 Permit.
- Monitor the implementation of the plans and programs required by the permit and determine their effectiveness in attaining water quality standards.
- Coordinate with RWQCB activities pertaining to implementation of the permit, including the submittal of all required reports, plans, and programs.
- Solicit and coordinate public input for any major proposed stormwater management programs and implementation plans.
- Develop and implement mechanisms, performance standards, etc., to promote consistent implementation of Best Management Practices (BMPs) among the permittees.
- Cooperate in watershed management programs and regional and/or statewide monitoring programs.

Co-Permittee Responsibilities - In addition to implementing the MS4 Permit within their respective jurisdictions, the Co-Permittees also are required to support the Principal Permittee in the following ways:

- Prepare and submit to the Principal Permittee in a timely manner all required information necessary to comply with permit reporting requirements.
- Designate at least one representative to the Management Committee and attend at least 9 out of the 11 Management Committee meetings per year.
- Notify the Principal Permittee immediately, in writing, of any changes to the designated representative to the Management Committee.
- Review and comment on all plans, strategies, management programs, and monitoring programs, as developed by the Principal Permittee or a subcommittee of the Management Committee.
- Participate in subcommittees formed to address stormwater related issues.
- Conduct and/or coordinate with the Principal Permittee on any surveys or characterizations needed to identify pollutant sources from specific drainage areas.

Responsibilities Applicable to All Permittees - All permittees are responsible for the implementation of the MS4 Permit within their own jurisdictions. This responsibility includes the following requirements:

- Implement all stormwater program elements identified in the MSWMP.

- Enact and revise policies and ordinances necessary to establish and maintain adequate legal authority to implement the stormwater program.
- Conduct storm drain system inspections and maintenance in accordance with the uniform criteria developed by the permittees.
- Take appropriate enforcement actions for violations of the stormwater regulations and ordinances for illegal discharges into the MS4 systems.
- Respond to or arrange for responding to emergency situations such as accidental spills, leaks, illegal discharges/illicit connections, to prevent or reduce the discharge of pollutants to storm drain systems and waters of the United States.

2.3.1.2 Management Committee

As authorized by the Agreement, the permittees have formed a Management Committee to manage and comply with the stormwater permit requirements across all County jurisdictions. This committee will continue as the overall guidance and decision-making body for the next five-year permit term.

Management Committee Structure - The Management Committee is made up of the Principal Permittee and one representative from each Co-Permittee's jurisdiction. The Principal Permittee chairs the Management Committee and takes the lead role in initiating and developing area-wide program activities necessary to comply with the MS4 Permit. Decisions made by the Management Committee must be approved by a majority vote of the representatives on a one vote per permittee basis.

Each Co-Permittee has designated an official representative to serve on the Management Committee. Any change in the designated representative to the Management Committee is made in writing and becomes effective upon filing with the Principal Permittee. Designation of an alternative representative to serve in the absence of the regular representative is optional, but the designation of an alternative representative must be made in writing to the Principal Permittee.

Management Committee Responsibilities - The Management Committee will continue to meet on the third Wednesday of every month except December for a total of 11 times each year. Each Co-Permittee is required to attend at least 9 of 11 monthly meetings each year.

The authority of the Management Committee is limited to providing guidance to the Principal Permittee with respect to program administration and approving elements of the area-wide stormwater management program. Specific Management Committee responsibilities include:

- Guide the Principal Permittee in:
    - Preparing and implementing an annual stormwater program budget;
    - Filing applications for stormwater permits as permittees;

  - Developing and implementing local and area-wide integrated stormwater management programs, including special studies required by the permit;
  - Filing compliance reports and annual reports with the RWQCB;
  - Establishing performance criteria for management programs;
  - Establishing uniform progress reporting formats;
  - Monitoring the implementation and effectiveness of area-wide BMPs; and,
  - Performing stormwater quality and hydrographic monitoring for permit compliance.
- Approve area-wide management program elements, including:
  - Annual area-wide operating budgets;
  - Recommended modifications to the MSWMP; and
  - Area-wide BMP programs.

Management Committee Subcommittees - While the overall responsibility for stormwater program development and implementation lies with the Management Committee, the establishment of subcommittees provides an efficient mechanism for managing the development and implementation of program elements. Permittees may choose which subcommittees they wish to participate on; however, permittees with expertise directly related to a subcommittee's purpose are encouraged to participate. Subcommittees report their findings and recommendations to the Management Committee for approval and adoption. Currently, six subcommittees regularly meet:

- Public Education
- Fiscal
- Training
- Development
- Monitoring
- MS4 Database

Management Committee Authority - The Management Committee does not assume any responsibility for implementing stormwater quality management programs for individual permittees or for ensuring that individual permittees implement programs consistent with the recommendations of the Management Committee. This responsibility remains with each individual permittee for their respective jurisdiction.

As noted above, the Principal Permittee, with guidance from the Management Committee, is responsible for annual reporting of MS4 Permit compliance to the RWQCB. If an individual permittee fails to make or report program progress, it is reflected in the compliance reports to the RWQCB.

2.3.2 Program Implementation

2.3.2.1 Implementation Approach

The Management Committee is responsible for identifying an approach for compliance with each MS4 Permit requirement. Currently, the committee relies on three different approaches to achieve compliance. These approaches, which will continue during the next permit term, are described as follows:

- ***Area-wide*** – Under this approach, all permittees implement the program using the same method. The Management Committee is responsible for fully developing and implementing programs which can be carried out on an area-wide basis.

  This approach is limited to those activities that generally apply to the entire area covered by the MS4 Permit and are not practical or cost-effective for implementation by individual permittees, for example, regional mass-media advertising to support public education and outreach permit requirements.

- ***Model*** – Under this approach the individual permittee implements a particular program requirement using an area-wide based model developed by the Management Committee. The Management Committee is responsible for the development of the model or template for the program requirement. The individual permittee may use the model directly or adapt the model to its own local jurisdiction.

  This approach is used when a stormwater program requirement is found to have many components that are common to all permittees. By combining efforts to develop the common components into a model example, the cost per permittee to address the stormwater program requirement is reduced. For example, the public displays developed under the Public Information and Participation program area can be used directly by each permittee or easily adapted for local use by a permittee.

- ***Individual*** – For this approach, each permittee develops its own methodology for implementing the stormwater program requirement. A number of stormwater program elements are developed and implemented locally by each permittee. Although the permittee rather than the Management Committee takes the lead in implementing these elements, the Management Committee may develop general guidelines and recommended levels of effort for use by the permittees during development of their individual programs.

A fourth approach will be evaluated and potentially implemented during the next or subsequent permit term. This approach involves coordinating stormwater program implementation requirements with other area-wide MS4 Permit programs, for example, Riverside County. Successful use of this type of coordination would move program implementation away from being based solely on political boundaries to being based at least in part on regional or even watershed boundaries. This approach

could be particularly beneficial for complying with TMDL implementation requirements. Section 5 of this ROWD discusses the potential for coordination between area-wide programs in more detail.

2.3.2.2 Program Reporting

Individual permittees are responsible for monitoring and evaluating the adequacy of their respective stormwater programs. In addition, permittee-submitted data, which are analyzed and assembled into reports by the Principal Permittee, are used by the Management Committee to monitor and evaluate the adequacy of area-wide program implementation.

To facilitate a unified approach for documenting and reporting stormwater program information the Management Committee has developed an MS4 Data Management System ("MS4 Solution") for the County MS4 Permit program. The MS4 Solution allows the permittees to individually enter and manage their own MS4 data in a central database via the Internet and then summarize and format the data to support preparation of the annual report. The types of data managed by MS4 Solution include:

- Inspections of businesses and construction sites
- Illegal discharges and illicit connections
- Municipal maintenance records
- Public education/outreach events
- Staff training
- Water quality management plans
- Agency-specific policies, procedures and ordinances
- Management and subcommittee meetings
- Fiscal data

The MS4 Solution is currently mostly functional; most of the permittees are already using the database to manage the inspection program. Over the next two years, the MS4 Solution will become fully functional and more refined as the permittees gain experience using it.

2.3.3 Fiscal Resources

Funding to implement the MS4 Permit program is comprised of two parts: (1) local permittee program funding, which supports program implementation within each permittee's jurisdiction; and (2) area-wide program funding, which supports the implementation of Management Committee activities.

2.3.3.1 Permittee Program Funding

The permittees are committed to funding, to the extent practicable, their local stormwater quality management program for the duration of the permit. To this end,

each permittee prepares an annual budget and informs its governing board about program activities and funding requirements that are necessary to comply with MS4 Permit requirements and implement program activities within the local jurisdiction. However, it is the decision of the governing body within each permittee's jurisdiction that determines final individual annual program funding.

2.3.3.2 Area-Wide Program Funding

The area-wide program is funded by contributions from all permittees according to the cost-share methodology established in the Agreement. The Principal Permittee prepares an annual budget and presents this budget to the Management Committee for approval. Under the new MS4 Permit, the annual budget will be divided into four program areas:

- ***Monitoring*** – Includes any sample collection and laboratory analyses regardless of purpose, for example, includes both routine monitoring and additional monitoring conducted to implement a TMDL.
- ***Public Education*** – Provides funding for all public outreach programs.
- ***Program Management & Regulatory Activities*** - Includes activities such as annual report preparation, California Stormwater Quality Association (CASQA) membership, program administration, ROWD development, participation in the TMDL development process, and participation in special projects such as the Stormwater Quality Standards Task Force (SQSTF).
- ***Training*** – Provides funding for any staff training or training conducted to implement the stormwater management program, for example training provided to developers.

The cost-share calculation varies among program areas (see draft Agreement in Appendix B). In 2006 the budget for the area-wide program was approximately $1,800,000. During the next permit term, the area-wide annual budget is anticipated to increase somewhat.

2.3.4 Legal Authority

As required by both the current and previous MS4 Permits, all permittees established adequate levels of legal authority to implement the stormwater management program within their respective jurisdictions. During the next permit term, all Permittees will periodically review their ordinances to ensure that they maintain the legal authority necessary to implement the stormwater management program for the duration of the permit.

2.4 Description of Stormwater Facility

The Principal Permittee, with input from the Co-Permittees, has updated land use and drainage maps for the watersheds covered within the permitted area. This

Table 2-2. Population and Land Area within Each Co-Permittee's Jurisdiction

Permittee	Population[a]	Land Area (mi^2)[b]
County of San Bernardino	152.224	208.0
City of Big Bear Lake	6,182	6.2
City of Chino	78,055	29.4
City of Chino Hills	77.969	41.7
City of Colton	51,781	15.8
City of Fontana	165,482	36.5
City of Grand Terrace	12,380	3.5
City of Highland	51,489	18.6
City of Loma Linda	21,912	7.4
City of Montclair	35,648	5.2
City of Ontario	171,113	49.9
City of Rancho Cucamonga	170,479	38.9
City of Redlands	71,086	36.2
City of Rialto	99,189	22.1
City of San Bernardino	201,823	59.9
City of Upland	74,099	15.1
City of Yucaipa	50,553	27.7

[a] – Source: California Department of Finance

[b] – Source: Area data from Assessor's parcels

information continues to be incorporated and updated in a geographic information system (GIS) electronic format. Pertinent features of the watersheds, including the storm drain systems, receiving waters, and land uses, have been updated using data from the Southern California Associated Governments, as reviewed by the cities. Current land area and population data for each Co-Permittee is provided in Table 2-2. Drainage maps illustrating the MS4 within each Co-Permittee's jurisdiction are provided in Appendix D.

2.5 Third Term MS4 Permit Program Accomplishments

The third-term permit included both routine activities (for example, monitoring or annual report preparation) and specific deliverables (for example, establishment of the WQMP). Much of the emphasis during the term was on firming up the BMPs that needed to be implemented in a variety of areas and getting this information out to the public and businesses. As a result, at the end of the third term, stormwater control information has become an integrated part of many daily activities ongoing in the County. With this foundation in place, refocusing the program to target specific water quality concerns, such as bacteria, is a natural progression of the program.

The following sections summarize the progress made in program implementation during the third permit term. Substantive supporting information is available in the annual reports submitted in 2002, 2003, 2004 and 2005, communications submitted to

the RWQCB during the permit term, Management Committee meeting files and the program's website: http://www.co.san-bernardino.ca.us/flood/npdes/index.htm.

2.5.1 Program Area Accomplishments

The third MS4 Permit contained numerous requirements for enhancing the stormwater management program. Following is a summary of the permit requirements completed since 2002.

Implementation Agreement

The permittees reviewed and revised the Agreement as part of the ROWD development process (see draft in Appendix B). A final Agreement will be provided the RWQCB after a fully executed Agreement is prepared.

Legal Enforcement/Authority

- The permittees completed a review of their storm drain ordinances and enforcement procedures for prohibiting discharges to the MS4. Area-Wide Enforcement Guidelines were prepared to support this effort.

- The permittees developed a restaurant inspection program which addressed numerous stormwater pollutant concerns, including, but not limited to, oil and grease disposal, trash bin area management, parking lot cleaning, spill clean-up, and inspection of grease traps or interceptors to ensure adequate capacity and proper maintenance.

- The permittees confirmed that they possessed the necessary legal authority to comply with permit requirements either through adoption of ordinances or modification of municipal codes.

Illegal Discharge/Illicit Connections; Litter, Debris and Trash Control

The permittees completed a review of their litter/trash control ordinances to evaluate the need for revising these ordinances. In addition, the permittees completed a general characterization of the trash and are implementing BMPs to control trash in urban runoff. These BMPs are periodically reviewed to determine if any additional trash and debris control measures need to be implemented.

Municipal Inspections

- The permittees completed the primary development phase of the MS4 Database which has resulted in the implementation of the MS4 Solution. This database, which will continue to undergo refinement as experience is gained in its use, houses the inventory of construction, industrial, and commercial sites/facilities within each permittee's jurisdiction. The inventory has been regularly updated with new information.

- As required by the permit, existing construction site inspection staff was properly trained by the date specified in the permit. New staff hired after this date have received similar training prior to beginning inspection activities. The permittees provide annual refresher training prior to October 1 to all inspection staff.

- The permittees completed the prioritization of construction, industrial and commercial sites/facilities within their jurisdictions as high, medium, or low threats to water quality. To the extent practicable, sites/facilities have been inspected according to the frequency defined by the MS4 Permit.

- The permittees identified industrial facilities that have the potential to discharge pollutants to the MS4 that did not have business permits or other authorization by the permittees. These facilities have been added to the MS4 Database and have been prioritized as required by the permit, that is, as high, medium, or low threats to water quality.

Sewage Spills, Infiltration into MS4 Systems from Leaking Sanitary Sewer Lines, Septic System Failures, and Portable Toilet Discharges

- Permittees with more than 50 septic tank sub-surface disposal systems in use worked with the appropriate agency within their jurisdiction to establish a mechanism to address septic system failures.

- The permittees developed a draft unified response plan to respond to any sewage spills that may have an impact on receiving water quality (*Sanitary Sewer Overflow Unified Sewage Response Plan*, July 1, 2003).

- The Principal Permittee completed its review of the permittee's existing oversight programs for portable toilets; no need for revision was identified.

New Development/Significant Redevelopment

- Prior to establishment of the WQMP, the permittees:

  - Established a mechanism to ensure that prior to issuance of any local permits or other approvals that all construction projects and industrial facilities that were required to obtain coverage under the State's General Stormwater Permits had filed a Notice of Intent to be covered by the relevant State General Permit.

  - Reviewed and modified the approval process for building, grading, and related permits to include incorporation of BMPs per the *Guidelines for New Development and Redevelopment* (Attachment B to the 2000 ROWD).

  - Reviewed and revised, as needed, their current grading/erosion control ordinances in order to reduce erosion caused by new development or significant re-development projects.

- The permittees established the WQMP to address urban runoff from new developments and significant redevelopments. This document replaced the *Guidelines for New Development and Redevelopment*. The WQMP was completed in 2004 and then amended in 2005 to incorporate the findings of a regional hydrology evaluation.

- As required by the permit, the permittees submitted to the RWQCB for approval a proposal to evaluate the effectiveness of selected BMPs for controlling erosion during new development by November 15, 2003. This proposal required the approval of the RWQCB Executive Officer. The permittees have not received a letter of approval or other formal direction regarding the erosion BMP study proposal. In early 2005, the permittees determined that there was a great need for a GIS-based map that identified stream channels in the area that might be subject to excessive erosion and constitute a "hydrologic condition of concern" (HCOC) as defined in the WQMP. Therefore, the permittees submitted a letter to the RWQCB Executive Officer requesting to substitute the preparation of an "HCOC map" in place of the erosion BMP study.

Public Education and Outreach

- The permittees completed a public awareness survey to determine the effectiveness of their existing public and business education strategy.

- The permittees participated in a joint outreach with other programs including, but not limited to, SQSTF, Caltrans, and other municipal stormwater programs.

- The permittees staffed a stormwater booth at a variety of events to distribute public education materials to the public. Each of the permittees participated in at least one event per year.

- The Management Committee reviewed the public and business education program and made recommendations for improving the program so that it reached as many residents and businesses as possible. The goal of this effort was to target all residents and business, commercial and industrial establishments and through the use of appropriate media make a minimum of 5 million impressions per year. This goal was consistently exceeded.

- The Management Committee proposed a study for measuring changes in knowledge and behavior as a result of the education program and submitted the proposal to the RWQCB for approval.

- The permittees worked with commercial businesses, including restaurants, automotive service centers, gasoline service stations and other similar facilities, to ensure implementation of the BMPs required by the MSWMP. To support this effort, permittees conducted workshops with restaurant owners, distributed BMP

materials, and provided information to these facilities' corporate environmental managers during outreach visits.

- The permittees developed public education materials to encourage the public to report concerns or activities that may impact stormwater quality, for example, illegal dumping or clogged storm drains. To support this effort, the permittees established a hotline (1-800-CLEANUP) and website (http://www.co.san-bernardino.ca.us/flood/npdes/pollution_reporting.htm) where the public could report concerns regarding activities or situations that could impact stormwater quality. Information regarding the hotline and website are included in stormwater education materials and in the governmental pages of all regional phone books.

- The permittees developed BMP guidelines for the control of household use of fertilizers, pesticides, herbicides, and other chemicals, and control of pollutants from mobile vehicle maintenance, carpet cleaning, commercial landscape maintenance, and pavement cutting activities. These guidelines have been distributed, through participation in community events, trade association meetings, and/or mail (for example see materials available at http://www.co.san-bernardino.ca.us/flood/npdes/educational_materials.htm).

- After evaluating the best approach for providing educational and General Industrial Permit materials to businesses within their jurisdictions, the permittees distributed these materials to the extent practicable.

Municipal Facilities/Activities

- The permittees completed an assessment of their flood control facilities to evaluate opportunities to configure and/or to reconfigure channel segments to function as pollution control devices and to optimize beneficial uses. The findings of this evaluation were provided in the annual report submitted in 2003.

- The permittees worked with the County Fire Chiefs Association to develop a list of appropriate BMPs to be implemented to reduce pollutants from training activities, fire hydrant/sprinkler testing or flushing, non-emergency fire fighting, and any BMPs that could feasibly be implemented to address flows that occur during emergency firefighting activities.

- The permittees developed a BMP fact sheet for local distribution to address public agency activities such as road construction and maintenance, street sweeping, catch basin stenciling, drainage facility cleaning and maintenance, etc.

- The permittees developed and distributed BMP guidelines for public agency and contract field operations and maintenance staff to address implementation of appropriate pollution control measures, for example, appropriate response to spills and illegal discharges.

- The permittees established mechanisms to ensure that contractor training requirements were included in new contracts and contracts that came up for renewal.

Program Management

The Management Committee met at least 11 times each year to discuss issues related to permit implementation and regional and statewide issues.

Monitoring

- **Water Quality Monitoring** – The permittees continue to routinely monitor water quality at five sites for a variety of constituents. Three of the five sites were selected to represent the quality of the stormwater; two sites serve as receiving water sites. The findings from each year's sampling effort as well as the cumulative findings since 1994 have been provided in each annual report. Section 3 provides additional information regarding the results of the monitoring program.

- **Watershed Activities** – As the Principal Permittee the District continues to be an active participant in various watershed efforts dedicated to improving water quality, gathering technical information to support the MS4 program and participating in basin planning activities. Following is a summary of these activities, many of which are still ongoing:

  - ***Stormwater Quality Standards Task Force*** (SQSTF or "Task Force") - The Task Force was created to evaluate current REC-1 beneficial use designations and associated water quality objectives in the Basin Plan. The Task Force includes representatives from EPA, RWQCB, Counties of Orange, Riverside and San Bernardino and a number of other interested parties including Inland Empire WaterKeeper. The permittees contribute substantial funding to the Task Force. With the completion of Phases 1 and 2, the Task Force has implemented Phase 3 which is focused on adopting Basin Plan amendments. As proposed, these amendments will establish refined recreational uses and establish revised bacteria objectives. Additional information is available at the Santa Ana Watershed Project Authority (SAWPA) website http://www.sawpa.org/projects/planning/stormwater2.htm

  - ***Big Bear TMDL -*** The District participates in TMDL development efforts for Big Bear Lake and tributary streams. Numerous agencies and funding sources are involved and the permittees continue to provide funding. A nutrient TMDL is currently undergoing public review.

  - ***San Antonio Canyon Watershed Group –*** The County and District are active members of SACWG. The SACWG is focused on developing watershed-based BMPs that when implemented protect water quality and the use of the watershed as a water supply source.

- ***Santa Ana River Bacterial Investigations*** - In July 2002, the District submitted a proposed workplan ("2002 workplan") (See 2003/2004 Annual Report) to assess concentrations of pathogen indicators in the Santa Ana River. The 2002 workplan was submitted in response to a Request for Technical Report (13267 letter) issued by the RWQCB in March 2000, and pursuant to a permit requirement (Monitoring and Reporting Program, III.4, required the permittees to develop and submit for Executive Officer approval a bacteriological monitoring program to determine the sources of elevated bacteria concentrations the Santa Ana River). No comments or response on the 2002 workplan was received from the RWQCB. Accordingly, although the 2002 workplan was designed to be cooperatively implemented by the District and the Riverside County Flood Control and Water Conservation District, the project was not implemented.

  In January 2004, the permittees requested approval from the Executive Officer to participate in an ongoing fecal pollution study in lieu of implementing the 2002 workplan. The fecal pollution study (*Dynamics of Point and Nonpoint Fecal Pollution from an Urbanized Watershed in Southern California*) was led by Dr. Stanley Grant of the University of California, Irvine. This study included a sampling station on Cucamonga Creek, which is within the area covered by the permit, and developed a model of portions of the Santa Ana River watershed. Study results are reported in: Surbeck, C. Q., Grant, S. B., Ahn, J. H., and Jiang, S. 2005. *Transport of suspended particles and fecal pollution in stormwater runoff in an urban watershed in southern California*. Submitted to Environmental Science & Technology for publication.

  The District plans to continue bacterial source investigations on Cucamonga Creek, using the site as a method-development watershed. The investigation will involve collaboration with researchers from University of California Irvine and possibly with Riverside County. RWQCB staff will also be provided an opportunity to comment on the study plan.

- ***Stormwater Monitoring Coalition (SMC) Studies*** – Per Sections III.6 and III.7, of the existing permit's Monitoring and Reporting Program the permittees have coordinated with the Southern California Coastal Water Research Project (SCCWRP) in regional monitoring and assessment efforts. The District participates on behalf of all the permittees in the SMC that operates in cooperation and with guidance from SCCWRP.

- **Completed Studies** – Several activities related to the monitoring program were completed during the permit term, including:

  - ***Comparative Evaluation of Microbial Source Tracking Techniques*** -This significant effort, which was described in detail in the 2003-04 Annual Report, was completed in 2003. Several reports resulted from the effort.

- ***Model Monitoring Program Guidance -*** This effort, which was a joint effort with SMC, resulted in the publication of the guidance, *Model Monitoring Program for Municipal Separate Storm Sewer Systems* (August 2004). A detailed description of this effort was provided in the 2003-04 Annual Report. The guidance is now available for use by stormwater programs.

- ***Peak Flow Study -*** This study was conducted to support the development of the requirements for hydrologic conditions of concern in the revised WQMP for area-wide permittees. Funding for the study was provided by the Los Angeles County Department of Public Works; the District participated in the technical advisory committee. The report is available online at ftp://ftp.sccwrp.org/pub/download/PDFs/450_peak_flow.pdf.

- ***Laboratory Inter-Calibration –*** This study was completed during FY 2003-04. A follow-up inter-calibration will be conducted in 2005-06.

- **Ongoing Activities and Studies** – The District has a number of other activities that it participates in that are ongoing:

  - ***MSAR Bacterial Indicators TMDL –*** This TMDL has been approved by the State Water Resources Control Board (SWRCB) and is expected to be approved by EPA soon. The District is participating in the monthly stakeholder meetings hosted by SAWPA. Currently the District is developing an agreement with Riverside County to support cooperative implementation of the TMDL. Both counties will work closely with other stakeholders to develop the Urban Source Evaluation Plan for submittal to the RWQCB for approval.

  - ***Regional Integrated Freshwater Stream Bioassessment Monitoring Program -*** The goal of this study is to build a regionally consistent bioassessment monitoring program. This project will be completed in three phases including: (1) methods standardization; (2) calibrating and validating a regional assessment tool; and (3) designing an integrated, coordinated regional monitoring program. The SMC is a funding partner in this study that is being conducted by SCCWRP and the California Department of Fish and Game. The permittees are contributing a portion of the funding. Once the study is complete, bioassessment sites will be selected in the MS4 Permit area portion of the watershed, and data will be collected.

  - ***BMP Effectiveness -*** This project will assess the effectiveness of low impact development techniques for projects in southern California. The project will evaluate what pollutants can be removed and at what efficiencies, and how much hydromodification can be reduced. Collaboration with the Water Environment Research Foundation and the EPA is possible with this effort.

2.5.2 Programmatic Effectiveness

Evaluating the effectiveness of stormwater management programs to reduce pollutants in urban runoff is a challenge regardless of the scale evaluated, for example, on a specific waterbody, watershed, or political jurisdiction such as a city or county. However, effectiveness can be measured in ways that provide a means of evaluating the program as a whole. This programmatic evaluation can focus on four key elements:

- ***Compliance with MS4 Permit Requirements*** – The permittees have tracked performance on the implementation of permit requirements, for example, the list of program area accomplishments presented in Section 2.5.1. Given that these requirements were established by the RWQCB, the presumption exists that implementation of these requirements must improve stormwater quality and minimize impacts to receiving waters. Each year, the permittees compile and report the status of compliance with permit requirements.

  A key example of an important permit requirement that has been completed and is now being implemented (and refined) is the requirement to submit WQMPs for new development and significant redevelopment projects. The WQMP includes stringent requirements for implementing BMPs on projects based on an analysis of pollutants of concern and hydrologic conditions of concern. The permittees are in various stages of implementing the WQMP requirements, but continued movement towards full implementation is expected to be effective in providing for improvements in the quality of surface runoff from development activities.

- ***Quantification of Programmatic Activities*** – The permittees annually document numerous actions that are prescribed to address potential sources of pollutants in stormwater. Examples include numbers of inspections, violations noted and addressed, spill response activities, public outreach materials or events, debris removed from or prevented from reaching the MS4, and specific municipal maintenance activities. Examples of quantifiable program elements that have been implemented that have increased the effectiveness of the stormwater program to reduce pollutants in stormwater include:

  - *Illegal Discharges* - Each year numerous discharges, spills, and illegal connections to the MS4 are reported and addressed. For example, for the FY 2004-2005 reporting year, 219 discharge events were reported and investigated; 256 were reported and investigated the previous reporting year. All were eliminated or permitted. Through timely reporting and investigation of illegal discharges, potential pollutants are prevented from entering the MS4 and receiving waters. This program element has a high degree of impact on discharge quality and thus can be considered highly effective. Each discharge or potential discharge addressed can be presumed to have had a positive impact on water quality.

- *Industrial and Commercial Inspections* - For the program area, over 12,000 industrial and commercial facilities have been identified and inventoried for inspection. These facilities vary in their threat to water quality, and have been prioritized accordingly. The number of inspections and ratio of violations to inspections has increased over recent years, demonstrating an increasing focus on compliance at industrial facilities and commercial businesses and an increased awareness among permittee inspectors (through regular training) of what constitutes a violation. It is believed that inspections and resulting correction activities are effective at preventing or reducing pollutant loads discharged to the MS4. However, given the widespread nature of facility locations and inspections and the varying activities and potential pollutants generated by the facilities, it is difficult to directly link facility inspection activities to specific water quality outcomes.

- *Construction Site Inspections* - An inventory of new and current construction sites has been developed and prioritized with respect to threat to water quality. The program reported a total of 2,040 construction sites in FY 2004-05, and over 3,000 inspections. Over 200 violations were noted and addressed. As for industrial and commercial facilities, it is believed that construction site inspections and resulting correction activities are effective at preventing or reducing pollutant loads discharged to the MS4, especially for controlling the runoff of sediment from active construction areas.

- *Public Agency Activities* - BMPs implemented by public agencies also result in direct improvements to discharge and water quality. The program reported an inventory of approximately 7,000 curb-miles of streets, with nearly 100% swept at least once per year; many are swept more frequently. Last year, over 1,000 tons of sediment and debris were removed from streets, and approximately 2.4 million cubic yards of materials were removed from drainage facilities. Removal of this amount of material from streets and drains certainly has a high degree of impact on discharge quality and thus can be considered highly effective.

- *Training* - Training stormwater program staff and other municipal staff on basic water quality, its protection, and program BMPs is essential for proper program implementation and effective inspections and outreach. Recent enhancements in the program's training elements, including web-based training, have provided for more and better access to specific training elements. Having a viable ongoing training program has been essential for implementing an effective program.

- ***Evaluation of the Public Response***: The permittees have reviewed public survey results to determine if the stormwater management program's public education message is being heard, and if changes in behaviors adverse to stormwater quality have occurred. Although evidence of increased awareness is apparent in some venues, it is often difficult to link this information directly to water quality

improvement. Two key examples of public education activities that are believed to have increased public awareness include:

- *Public Survey Results* - Per the most recent program public education survey, nearly 50% of people surveyed recall a radio advertisement, billboard, or newsletter regarding storm drain protection and water quality (Goodwin Simon Survey, 2002). This level of awareness is double that of previous surveys, demonstrating increased effectiveness at communicating the program's message.

- *Residential Waste Collection* - Residential program efforts include household hazardous waste collection, information flyers and mailings, displays at libraries and public facilities, and school programs. Household hazardous waste collection locations are heavily promoted. More than 28,000 individuals deposited waste materials at these locations in 2005; over two million pounds of household hazardous waste are collected each year.

While overall public awareness may be on the increase, the challenge for the next MS4 Permit will be to target education to where it is needed most, that is, changing behaviors or minimizing activities that contribute bacteria to the MS4.

- ***Evaluation of Water Quality Data*** – The permittees annually review and report on water quality monitoring data or special study results to identify any changes in water quality. Water quality monitoring can be a direct measure of program effectiveness, but given the number of pollutant sources and other factors outside of the MS4 system that can affect water quality it is difficult to link the stormwater program management activities directly to changes in water quality. However, what is known regarding water quality will be discussed further in Section 3 of this ROWD.